

Patent claims

1. Vibration exciter for soil compacting devices, having imbalance shafts (2, 3) that stand parallel or coaxial to one another and that can be driven in opposite directions with the same rotational speed, each of the imbalance shafts (2, 3) bearing an imbalance mass (4, 5; 16, 17) attached to it in stationary fashion and an imbalance mass (6, 18) that can be moved in rotational fashion relative to the shaft, and each of the imbalance shafts (2, 3) having allocated to it an adjustment means (9, 19) for adjusting the position of the respective movable imbalance mass (6, 18) relative to the imbalance shaft (2, 3) that bears it, **characterized in that** the relative positions can be adjusted using the adjustment means (9, 19) in such a way that the centrifugal forces produced by the imbalance masses (4, 5; 16, 17; 6, 18) during the rotation of the imbalance shafts (2, 3) cancel each other out as a whole in each rotational position of the imbalance shafts (2, 3).
2. Vibration exciter according to Claim 1, **characterized in that** the relative position on each of the imbalance shafts (2, 3) can be adjusted in such a way that the centrifugal forces of the imbalance masses (4, 5, 6; 16, 17, 18) borne by this imbalance shaft cancel each other out in each rotational position of the imbalance shaft.
3. Vibration exciter according to Claim 1 or 2, **characterized in that** in order to effect a forward motion of the soil compacting device in a horizontal first direction, the relative positions are capable of being modified in such a way that the centrifugal forces of the imbalance masses do not cancel one another; rather, an overall centrifugal force resulting from the centrifugal forces has a horizontal component.
4. Vibration exciter according to Claim 3, **characterized in that** when there is a change between the first direction and an opposite, second direction, the relative positions defined in Claim 1 are capable of being assumed during the transition.

5. Vibration exciter according to one of Claims 1 to 4, **characterized in that** a change of the relative positions can be executed in that the magnitude of an overall centrifugal force resulting from the imbalance masses is proportional to a speed of forward motion of the soil compacting device.
6. Vibration exciter according to Claim 5, **characterized in that** the change of the relative positions can be executed continuously.
7. Vibration exciter according to one of Claims 1 to 6, **characterized in that** the imbalance shafts (2, 3) are coupled with one another positively so as to be capable of rotation in opposite directions.
8. Vibration exciter according to one of Claims 1 to 7, **characterized in that** the phase position of the imbalance shafts (2, 3) to one another cannot be modified.
9. Vibration exciter according to one of Claims 1 to 8, **characterized in that** the adjustment of the relative positions on the imbalance shafts (2, 3) using the adjustment means (9, 19) can be executed synchronously.
10. Vibration exciter according to one of Claims 1 to 9, **characterized in that** the adjustment means (9, 19) can be actuated electrically, hydraulically, pneumatically, or mechanically.
11. Vibration exciter according to one of Claims 1 to 10, **characterized in that** at least one part of the imbalance masses is formed from a plurality of imbalance elements (4, 5; 16, 17).